



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,141	10/19/2001	Hiroshi Hata	211141US2PCT	6897

22850 7590 04/28/2003

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

BOTTORFF, CHRISTOPHER

ART UNIT	PAPER NUMBER
----------	--------------

3618

DATE MAILED: 04/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/889,141

Applicant(s)

HATA ET AL.

Examiner

Christopher Bottorff

Art Unit

3618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19, 27 and 28 is/are rejected.
- 7) ☒ Claim(s) 20-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6 and 7. 6) ☐ Other: _____

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on December 3, 2001 and August 22, 2002 have been considered by the examiner.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 recites the limitations "said detection means" and "said control means" in lines 6 and 8 respectively. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6-8, 12-18, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubo JP 09-046821 (note that US 5,722,502 provides an English language explanation of this technology developed by Kubo).

Kubo discloses a hybrid vehicle with a power output apparatus having an engine 28 and two motors 10 and 24, wherein power output is provided through a drive shaft. See Figure 1. A changeover means 36 and 40 changes over a connection state of the engine and motors between a parallel connection mode and a series connection mode. See the English abstract. One of the two motors 10 functions as a power regulation unit that has at least two rotating shafts and is capable of regulating magnitude of power transmitted between the at least two rotating shafts through transmission of electric power. The power regulation unit 10 and the other motor 24 are arranged in series between an output shaft of the engine and the drive shaft. The changeover means includes a connection mechanism 36 that connects and disconnects the power regulation unit with and from the other motor, and a constraint mechanism 40 that constrains one of the at least two rotating shafts in the power regulation unit and thereby allows conversion between electric power and mechanical power in the power regulation unit in a released position of the connection mechanism. In particular, the

Art Unit: 3618

constraint mechanism 40 constrains rotation of the specific shaft 38c that is linked with the connection mechanism 36.

Detection means (22, 32, 34, 42, 44, shift lever, etc.) are capable of detect a predetermined parameter relating to a driving state of the hybrid vehicle, including determining: whether or not a current gearshift position is at a reverse position, whether or not the hybrid vehicle is at a stop, whether or not the hybrid vehicle is in a specific driving state that requires monitoring of the engine, and whether or not the hybrid vehicle is in a certain driving state that requires a stop of the engine. See Figures 3-7.

A control means 20 controls the changeover means to change over the connection state, based on a result of the detection. Based upon the functional requirements of the control means, the control means inherently includes a storage unit that stores a mapping of each range of the predetermined parameter to the connection state having a high driving efficiency. Also, the control means inherently includes a unit that refers to the storage unit based on the result of the detection by the detection means and implements the changeover of the connection state. The control means is capable of selecting the series connection mode when it is determined: that the current gearshift position is at the reverse position, that the hybrid vehicle is at a stop, when the hybrid vehicle is in the specific driving state, or that the hybrid vehicle is in the certain driving range. See Figures 3-7.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo JP 09-046821 in view of Varela, Jr. US 5,172,784.

Kubo does not disclose that the power regulation unit includes a pair-rotor motor having two rotors that are rotatable relative to each other. However, Varela, Jr. teaches the old and well known practice of providing a power regulation unit in a hybrid vehicle with a pair-rotor motor having two rotors that are rotatable relative to each other. See column 8, lines 18-22 and 41-43, and column 11, lines 33-36. From the teachings of Varela, Jr., providing the power regulation unit of Kubo with a pair-rotor motor having two rotors that are rotatable relative to each other would have been obvious to one of ordinary skill in the art at the time the invention was made. This would provide the unit with automatic electronic limited slip differential action.

Claims 4, 5, 10, 11, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo JP 09-046821 in view of Yamaguchi US 5,806,617.

Although Kubo discloses a gear unit 38 having three rotating shafts 38a, 38b, 38c, a motor generator 24 linked with one of the three shafts 38b, and the constraint mechanism linking 40 the residual two shafts of the gear unit (see Figure 1), Kubo does

Art Unit: 3618

not disclose that the gear unit is a planetary gear unit. However, Yamaguchi teaches the old and well known use of planetary gear units 24 with hybrid vehicles. See Figure 8. From the teachings of Yamaguchi, providing the gear unit of Kubo as a planetary gear unit would have been obvious to one of ordinary skill in the art at the time the invention was made. This would allow torque to be transferred efficiently between the shafts. Moreover, in regard to claim 19, despite this modification the detection means of Kubo would be capable of detecting a required torque to be output from the drive shaft, and the control means would be capable of making both the connection mechanism and the constraint mechanism in coupled positions when the required torque is not less than a preset value.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo JP 09-046821 in view of Moroto et al. JP 07-107617.

Kubo does not disclose route information input means or that the control means carries out the changeover by taking into account the route information. However, Moroto et al. teach the old and well known practice of providing a hybrid vehicle with route information input means that inputs route information relating to a driving state of the hybrid vehicle, with regard to a preset driving route of the hybrid vehicle, and enabling a control means to carry out a system changeover by taking into account the route information. See the English abstract. From the teachings of Moroto et al., providing the hybrid vehicle of Kubo with a route information input means, such that the control means carries out the changeover by taking into account the route information,

Art Unit: 3618

would have been obvious to one of ordinary skill in the art at the time the invention was made. This would allow the vehicle to minimize exhaust gas emissions in designated areas.

Allowable Subject Matter

Claims 20-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Furutani, Yang, Yamaguchi et al. US 5,643,119, Yamada et al., and Yamaguchi US 5,915,489, disclose hybrid vehicles with power output arrangements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Bottorff whose telephone number is (703) 308-2183. The examiner can normally be reached on Mon.-Fri. 7:30 a.m. - 4:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Johnson can be reached on (703) 308-0885. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7687 for regular communications and (703) 305-7687 for After Final communications.

Art Unit: 3618

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

A handwritten signature in black ink, appearing to read "Christopher Bottorff". The signature is fluid and cursive, with the first name "Chris" and last name "Bottorff" clearly distinguishable.

Christopher Bottorff

April 22, 2003